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ABSTRACT

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A titanium catalyst for reaction between a
Compound Having a carbon-carbon unsaturated bond and a compound having an
electrophilic functional group or an electrophilic reagent,
said titanium catalyst being composed of a titanium compound
represented by the formula (1) below



(where X^1 , X^2 , X^3 , and X^4 denote independently a halogen atom,
C₁₋₂₀ alkoxy group, aralkyloxy group, aryloxy group, or -NRxRy
group (where Rx and Ry denote independently a C₁₋₂₀ alkyl group
or aralkyl group), and any two of X^1 , X^2 , X^3 , and X^4 may form a
ring.) and a Grignard reagent represented by the formula (2)
below in a molar amount 1.5-2.5 times as much as the titanium
compound.



(where R¹ denotes a C₂₋₁₀ alkyl group having a hydrogen atom at
the β position and X⁵ denotes a halogen atom.)

The titanium catalyst of the present invention
activates the carbon-carbon unsaturated bond, which has a
comparatively low reactivity, thereby catalyzing the reaction
with an electrophilic functional group. It is inexpensive
and industrially advantageous. When applied to reaction
Compound Having a between a carbon-carbon unsaturated bond and an electrophilic
functional group, it yields industrially a variety of adducts
of a compound having a carbon-carbon unsaturated bond and a
compound having an electrophilic functional group, and it
also yields a variety of intramolecular adducts of a compound
having a carbon-carbon unsaturated bond and an electrophilic
functional group in the same molecule.